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Measures To Deal With Mercury Presented By Swedish Expert

Methods adopted by Ontario industries to cease mercury discharges have generally been "very excellent", according to Dr. Hans Bouveng, a Swedish expert on mercury pollution.

Dr. Bouveng, technical director of Sweden's Pollution Research Laboratory, recently spent two weeks studying the mercury pollution problem in Ontario at the request of the Ontario Water Resources Commission. (Sweden became aware that mercury discharges were adversely affecting its waterways about three years ago. Dr. Bouveng investigated the chlorine industry's contribution to the problem and presented a report, evaluating the situation and proposing remedial measures, early in 1967.)

For most of his two-week stay in Ontario, Dr. Bouveng evaluated methods being utilized by Ontario industries to prevent discharge. He examined the technical efficiency of the control processes of six industries critically linked with mercury pollution and discussed improvements with company officials and OWRC staff. He also considered remedial measures that might be undertaken to help eliminate mercury from the eco-system.

Though there are basic similarities between mercury problems in Sweden and Canada, Dr. Bouveng points out that there are also important differences. For example, he says, in Sweden there are no long rivers and in most cases mercury will eventually be discharged to the sea. Be-



Dr. Hans Bouveng

cause of the great length of Ontario's river systems, mercury is likely to be retained in the waterways for a longer period.

Dr. Bouveng stresses that it is difficult to pinpoint the amount of time necessary to 'cure' provincial waterways of mercury pollution and that the time will, in fact, vary from one area to another, in line with local factors. "In Sweden we are aware that it may take years," he says.

Though, as indicated earlier, Dr. Bouveng found Ontario industry's handling of the mercury problem satisfactory, he was able to suggest certain changes, modifications and improvements. For example, he found, in several instances, old infected sewers were still leaching mercury even though direct discharge from the plants had been curbed. He also recommended that dredging of the bottom be initiated at certain locations.

Dr. Bouveng prepared a detailed report on his findings for OWRC management.

New Grants Approval Office Now Operating

A grants approval section has recently been established by the department of energy and resources management to deal with applications for grants under the new Pollution Abatement Incentive Act.

The act, assented to by the legislative assembly on June 26, stipulates, basically, that pollution control equipment for air, water and waste management is eligible for rebate of the five per cent provincial sales tax. Where use of equipment is not

solely for pollution, the amount of the tax rebate is to be in the same proportion as the equipment is used for abatement of pollution or the treatment or disposal of waste.

The act also stipulates that, when a major change to a manufacturing or processing facility for the production of goods or merchandise results in pollution abatement, grants may be made in an amount not to exceed the five per cent tax on equipment necessary for the change. To be eligible for the grant, appli-

cants must produce evidence that they have paid the provincial tax.

Application for a grant must be made not later than thirty days after the end of the calendar year in which the pollution abatement improvements are made.

The act is retroactive to April 1, 1970 and is valid until April 1, 1975.

Application forms are available from the grants approval section, department of energy and resources management, 880 Bay Street, Toronto 5, Ontario.



Water management in Ontario

VOL. 3, NO. 6

Watertalk

NOVEMBER/DECEMBER, 1970

Ontario Programs Commended At Meeting Of U.S. Committee

Ontario's pollution control program in the field of water resources management was highly praised in a December meeting of the Legislative Committee on Lake Erie.

The Committee, composed of legislative members from the four states bordering Lake Erie (Michigan, Ohio, New York and Pennsylvania) met for a two-day session in Toronto at the invitation of the Ontario government. Prime objective of the Committee, established in 1969, is the exchange of information

and co-ordination of legislative activities in order to improve the environmental quality of Lake Erie.

A brief on Ontario's water management program and the province's handling of critical issues was presented at the conference by OWRC chairman Donald J. Collins.

Chairman of the Committee, assemblyman John W. Beckman, New York, acknowledged that Ontario is providing the leadership in water pollution control in the Great

Lakes. "It would be natural," he said, "to suppose that the United States, with its longer history of industrialization and greater density of population in the Lake Erie region would provide a useful example for Ontario to follow ... On the contrary, I find that Ontario, through its water resources commission gives us a useful model in the field of water resource management ..."

He added that he was "immensely impressed" with the Commission's foresight in anticipating the problems of future growth as well as with its "effective approach" to present-day problems.

Included in the agenda of the meeting was a presentation by Walter A. Lyon, director of Pennsylvania's bureau of sanitary engineering, on the structure and responsibilities of the various national and international agencies concerned with pollution in the Great Lakes and a consideration of possible revisions in order to improve their effectiveness. Mr. Beckman indicated that "high priority" would be given to devising more effective governmental approaches, at future meetings.

Other highlights of the conference included a review of mercury pollution, as well as discussions on agricultural run-off and monitoring standards and facilities in the Lake Erie basin.

Mr. Beckman said subsequent conferences would place greater emphasis on recommending specific actions and policies to the appropriate levels of government in order to achieve pollution control objectives of the Committee.

A photo-feature on the meeting appears on page two.



OWRC Policy-Makers

Best wishes in the new year are extended to readers of Watertalk by the OWRC commissioners, shown during a recent session in the board room at the Commission's headquarters. Pictured (l. to r.) are commissioners F. S.

Hollingsworth and H. E. Brown; vice-chairman J. H. H. Root, MPP; general manager D. S. Caverly; chairman D. J. Collins; commission secretary W. S. MacDonnell; and commissioners L. E. Venchiarutti, D. A. Moodie and Dr. C. A. Martin.



Watertalk

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A Key Acknowledgement

An outstanding characteristic of the recent conference of the Legislative Committee on Lake Erie, held at Queen's Park, was the consistent acknowledgement by American officials during the course of discussions that a vastly strengthened U.S. effort is necessary to curb continuing pollution in Lake Erie. (The Committee is composed of legislative members from the states bordering Lake Erie. Ontario officials attend the meetings as observers.)

The conference could be best described as an action-oriented exploratory meeting. An extremely positive self-criticism was expressed by the U.S. legislators. Inadequacies in the present methods of handling pollution problems in the international Great Lakes were scrutinized, existing legislation examined, and plans for evolving remedial action discussed.

The U.S. delegates showed, too, (as well as Ontario observers!) an awareness of the unfairness in continuing to lag in pollution control measures while Ontario perseveres in the introduction and development of modern anti-pollution programs. The legislators displayed a determination to overcome the state-federal problems related to the financing of sewage treatment projects on Lake Erie.

Emphasis in the future meetings of the Committee is to be placed on establishing the specific measures that should be taken in order to ensure adequate pollution control in Lake Erie.

Meeting Oriented Toward Action

Setting for the recent meeting of the Legislative Committee on Lake Erie was the MacDonald Block of the Provincial parliament buildings. Right: Walter Lyon, director of Pennsylvania's bureau of sanitary engineering, details

the functions of pollution control bodies currently in existence, during a conference working session. Mr. Lyon has become a well-known figure in Canadian pollution control circles. Lower Right Corner: John W.

Beckman, chairman of the Committee, delivers summary of the conference proceedings in which he praised progressive Ontario programs. Below: OWRC chairman D. J. Collins explains significance of conference to Toronto reporters at press conference.



SURVEY POINTS for coming season of operations are plotted by Ray Manson (left) and Andy Matwichuk, of OWRC's division of sanitary engineering, who directed much of last season's field operations. The program will likely be expanded in its second year.

\$9-million Pollution Abatement Program Announced By Kimberly-Clark

Kimberly-Clark of Canada Limited announced in December it will spend nearly \$9-million on air and water pollution control projects at mill and plant operations in Ontario over a three-year period ending in 1972.

The company lists the following projects on its pollution control program: —installation of a clarifier system at its St. Catharines mill that will process effluent to meet and even exceed OWRC requirements in removing suspended solids presently discharged into the Welland canal. The

\$1,200,000 program is to be completed in 1971. The mill's boilers are being converted to natural gas and oil from coal to ensure cleaner air at a cost of \$240,000 with completion scheduled for 1972.

—installation of the most modern facilities for water treatment and for effluent control systems to protect air and water at the company's new tissue plant which is nearing completion at Huntsville. Cost of these built-in systems totals \$2,500,000. The plant will commence operations next spring.

—two works underway at the Terrace Bay mill, consisting of installation of evaporators for air pollution abatement to be completed by 1972, and conversion of the mill's boilers to fuel from coal this year. Total cost of the two projects is to be \$1-million.

Additionally a \$4-million air and water pollution control program is being carried out at the giant Spruce Falls Power and Paper Co. Ltd. pulp and newsprint mill complex at Kapuskasing. This program, to be com-

pleted in 1971, includes installation of a screening and recycling system in the bark removal process, a boiler replacement project for the burning of bark, and installation of a large settling clarifier system for waste removal. The system is designed to remove 75 per cent of the suspended solids presently discharged by the company to the Kapuskasing River.

All of the industrial waste effluent programs have been reviewed and approved by OWRC's industrial waste division.

Surveys On Recreational Lakes To Move Up Trent System

OWRC's investigations of the water quality in recreational lakes will likely continue to concentrate on the Trent waterway in 1971, moving up the system towards Lake Simcoe.

In this first year of the program's operation, the Commission's efforts have centred on the Kawartha Lakes sector of the Trent system. The Trent waterway is considered to be a "top priority" area since it is vital to much of Ontario's recreational activity and is also an important navigational system, linking Lake Ontario to Georgian Bay.

It is probable that the staff and facilities devoted by OWRC to the recreational surveys will be expanded in the coming year. This year's program — organized within a month — was accomplished only by "stretching" existing facilities. Fifteen recreational lakes were tested for bacterial content in survey operations that took one of OWRC's mobile laboratories (temporarily "borrowed" from another program) some 6,000 miles. Generally, the program required five personnel for collection of samples and conducting analyses in the mobile laboratory. Most of this staff consisted of student workers.

Accuracy was a prime objective in the Commission's study of conditions in the lakes. Data collected in this first stage of the investigations must be compared with data which will be collected following correction of faulty facilities. This will enable assessment of the effectiveness of the control measures being taken. (While OWRC is conducting water quality surveys, the Department of Health is investigating waste disposal units and methods in the vicinity of the lakes and requiring improvements where necessary.)

A radical scheme for the collection of data was evolved by the Commission to ensure accuracy in its assessment of

the water quality conditions. Earlier studies had determined that water quality could be best determined by sampling on a number of consecutive days. In the Kawartha Lakes, the surveys were conducted in 11-day sessions, carried out in each area during the spring, summer and fall, to get the most comprehensive picture of the many factors affecting water quality.

Throughout last summer's investigations, OWRC received great support from the public. The Kawartha Tourist Association ensured that cottagers were aware of the program by promoting and co-ordinating television and newspaper coverage. Public tours of the mobile laboratory were very popular and one Peterborough company — Outboard Marine

Corporation — even outfitted the Commission with a boat and outboard engine for its surveys of Stony, Clear and Lovesick lakes—free of charge!

With an increase in staff and facilities devoted to the program, OWRC hopes to double the extent of its investigations in this vital area in the coming year.



Tops In Operators Course

Some 140 personnel from areas as distant as British Columbia and Newfoundland attended OWRC's senior water pollution control plant operators course held, early in December, at the Commission laboratories.

Object of the five-day course, sponsored by the Commission, was

to give advanced training to the senior technical staff of sewage treatment plants.

Top honors among participants in the learning sessions were taken by John Stubbington (shown receiving award in above photo) of OWRC's Waterloo water pollution control plant, who achieved an

average of 96% in tests. Close runner-ups were Jack Landry (right) Welland sewage treatment plant, and Eric Waldron, St. Catharines sewage treatment plant, who averaged 95% and 93%, respectively. Awards were presented to the trio by OWRC vice-chairman, John Root MPP.

Internal Information Centre Established

An internal information centre to assist OWRC management in assessing the Commission's programs and meet overall water management objectives for the province has been established.

PROVIDE BENCHMARKS

Basically, the centre will provide management with up-to-date data concerning progress on projects and

the handling of critical issues.

Centralization of information relating to divisional activities will ensure effective co-ordination of inter-divisional projects as well as timely execution of assignments. Material in the centre will provide "benchmarks", enabling management to measure progress being made towards objec-

tives and to plan future programs.

Tom Murphy, 30, formerly with OWRC's division of project development will supervise the centre. Mr. Murphy was employed by Ontario department of health for two years, before joining OWRC in 1967. He also spent five years in municipal operations with the Toronto Health Department.

High Mercury Concentrations Found In Seal Livers

Mercury concentrations in the livers of seals off the west coast has led to recall by the U.S. Food and Drug Administration of 25,000 liver pills made from seals killed in Alaskan waters in 1964.

The livers had been freeze-dried by an American nutritional products firm and used, over a six-year period, to make 1,250,000 pills. The contaminated pills were described by the FDA as constituting a "possible health hazard."

Recall was requested by the FDA after inspectors found mercury concentrations at 60 times the level set as safe for food. Mercury concentrations as high as 172 parts per million were found in livers of 50 seals caught this year off the west coast.

Though it is still not known specifically how the seals have

become contaminated, it is likely through the consumption of mercury-laden fish.

Mercury has been found in problem amounts in 33 states and eight Canadian provinces.

Thermal Curbs Proposed In U.S.

A ban on discharge of warm cooling water from new power plants planned on Lake Michigan has been proposed by agencies of the U.S. Department of the Interior.

Officials of the department claim that the warm water will harm aquatic life and hasten deterioration of water quality. The department also claims the 24 generating stations currently in operation along the lake shore can construct and utilize cooling towers at negligible cost to the consumer. Lake Michigan's pollution problems are aggravated by the fact that it is virtually landlocked.

In similar developments on Lake Erie, the Department of the Interior and the U.S. Bureau of Fisheries has urged that two nuclear power plants and a fossil-fueled plant, proposed for the American side of the lake, be equipped with cooling towers to minimize thermal pollution.

In Ontario a highly sophisticated program has been developed by OWRC for predicting the effects of thermal discharges from proposed generating stations and other industries. Adequate safeguards are required before the plants commence operation.

New Treatment System Opened In Ceremony At Chesterville

Residents of Chesterville, Ontario, celebrated the opening of a new \$725,960 water pollution control system, November 24, in a public ceremony held in the town's municipal building. OWRC Commissioner D. A. Moodie officiated at the ceremony along with representatives of various levels of government, including the Hon. F. M. Cass, Q.C., MPP for Grenville - Dundas, and Speaker of the Legislative Assembly of Ontario.

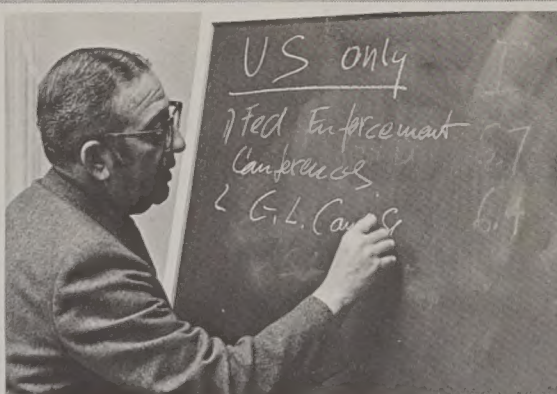
The system consists of a 14.5 acre lagoon, a pumping station and a sewer collector system which services the entire village. With a treatment capacity of 81,600 imperial gallons

per day the lagoon, linked with some five miles of main in the sewage network, provides Chesterville with a modern and efficient sewage service.

The pollution control system was financed under a provincial plan which requires payment for the service on a use-basis only. The project qualified for a 37.7% provincial subsidy under a new financial assistance policy wherein the province ensures that the cost of sewage service to a municipality will not exceed an average home charge of \$120 per year. OWRC will own and operate the facilities on behalf of the residents of Chesterville.



AT CHESTERVILLE OPENING CEREMONY (l. to r.) Hon. Fred Cass, Reeve James Brannen, ex-reeve George Barkley and Aubrey Moodie, OWRC Commissioner, cut tape signifying start-up of system.



Nature And Man

A Conflict In Living Standards

With the ever-expanding number of pollution and sociological problems, primarily caused by industrial-urban growth and development, perhaps it is time to reconsider or up-date our definition of "a high standard of living."

Traditionally, our living standard has tended to be gauged by the accumulation of the various paraphernalia associated with comfort and recreation—cars, furnishings, bathrooms, etc. (Bathrooms, indeed, would appear to be one of the key fixations of the industrial-urban society. From the layout of many modern dwelling units, wherein "two-and-one-half" or more bathrooms are often provided in a total living area scarcely larger than the occupant's thumb, one might reasonably deduce that the average

North American whiles away a great many hours in the bathroom.) Production of these luxuries is, of course, inextricably linked with continuous industrial growth.

Ironically, we appear to have reached the point where, like a latter-day Frankenstein monster, these comforts—often of an extremely peripheral value—are causing discomforts in a far more basic sense. Unquestionably, as urbanization continues and cities pass their optimum sizes, we are being forced into smaller living areas and being subjected to a growing list of hazards and nuisances—from air pollution to traffic problems.

Nor have the discomforts been strictly confined to the city. Many an avid nature lover has, in recent years, been chagrined to learn that

wastes from the two toilets and automatic washer in his 'cottage' are probably destroying the lake which he enjoys so much.

It is these adverse factors, then, that modern conservationists are thinking of when they propose that we seriously study the mechanism and possible benefits of a 'non-expanding' economy. Certainly much of the progress we are currently achieving is of very questionable value and is getting us into an increasingly complex maze of problems.

A first step toward coming to grips with some of these problems would be to more closely relate these expanding discomforts in our personal and natural environment with our concept of what constitutes standard of living.

News Round-up

- Canadian authors for the Sixth International Conference on Water Pollution Research are being actively sought by the Canadian committee of the International Association. The conference is to be held in Jerusalem June 18-24, 1972.

Topics on the agenda will include: arid zones and problems in developing countries; waste-water reuse and reclamation; low cost waste-water treatment systems; and tertiary and advanced treatment methods.

Some 50 papers will be presented on all aspects of water pollution and treatment. Travel funds are available to successful Canadian authors.

Abstracts should be sent before June 1971 to: Dr. J. B. Sprague, Dept. of Zoology, University of Guelph, Ontario.

- Three courses will be offered at the 16th Summer Institute in Water Pollution Control to be held at Manhattan College. Two one-week courses for advanced study in 1) analysis of streams, estuaries and coastal waters and 2) biological waste treatment will be held concurrently, May 24 to 28. An additional three-day course on advanced topics in mathematical modeling of natural water systems will be introduced June 1-3.

Registration fee for the one-week courses is \$225. and for the three-day course \$150. Correspondence regarding the courses should be addressed to: D. J. O'Connor, environmental engineering & science program, Manhattan College, Bronx, N.Y. 10471.

- A cross-Canada survey by the Canadian Press shows the majority of housewives are not switching to low or non-phosphate detergents because they prefer the whiter wash and lower cost of phosphate-base detergents.

Major supermarket chains noted a brief summer-time trend toward the low-phosphate products after publicity about pollution factors. After the news reports died down, housewives returned to their former detergents.

Phosphates are critically associated with the development of algal conditions in some waterways.

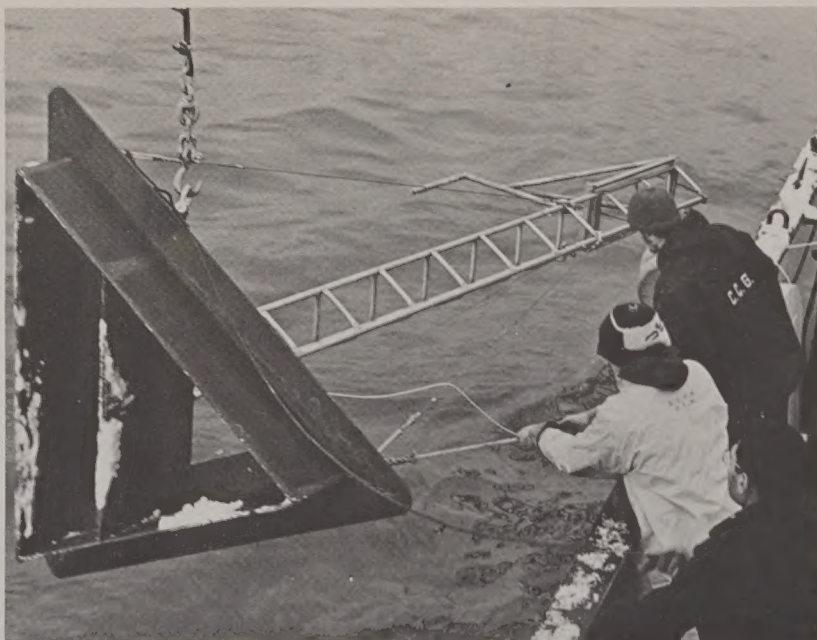
Water Study On An Icy Winter Day



Frenchman Bay, on a frigid day in December, was the site for one of OWRC's more spectacular winter water management activities. A submersible current recording unit was installed off the bay utilizing the Great Lakes Institute's 125-foot research vessel, Port Dauphine, loaned to OWRC for the operation. The support structure for

the underwater meter was lowered into the waters via a crane mounted on the vessel's deck. The recording meter was then installed by divers working from a tender. Data collected by the meter will be invaluable in determining location and construction details for a sewage treatment plant to be located in the area.

Left: On deck of Great Lakes Institute research vessel, Port Dauphine, OWRC environmental engineer, Merv Palmer, directs lowering of submersible meter support structure into waters of Frenchman Bay. Below: Massive structure, hoisted by cranes, is directed over the side of the research vessel.



Allan B. Patterson

Co-ordinator For Area Projects Appointed By Commission

Allan B. Patterson, a mechanical engineer, has been appointed area projects co-ordinator, a position recently established within the project development division of the Ontario Water Resources Commission.

The position will involve the co-ordination of the steps and measures required to advance regional water supply and sewage treatment pro-

jects to completion. (Regional projects are those which serve a number of municipalities over a widespread area via a common central system). The work will require close liaison with municipal officials, consultants and construction engineers as well as with specialists within OWRC, in the different stages of development of area projects.

Mr. Patterson brings to the position broad experience in the water management field.

For eight years—from 1957-65—he was deputy commissioner of works, water supply division, of Metropolitan Toronto's Department of Works. In total, Mr. Patterson has 18 years of direct experience with municipal operations.

From 1965 to 1969, Mr. Patterson was director in charge of the design department for James F. McLaren Ltd., consulting engineers, Toronto. Projects with which he became involved in this

period included two large OWRC area water supply schemes—The Lake Erie and Lake Huron water supply systems. In 1969 he was appointed vice-president of technical services at McLaren.

It is anticipated that Mr. Patterson's experience in the development of water supply and sewage projects will be invaluable in coping with the many complex factors associated with OWRC area schemes.